

**ASLA 2022 Conference on Landscape Architecture** 

## Sustainable Event Impact Assessment

Opportunities for Future Sustainability



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#### **Show Summary**

Show dates: November 11-14, 2022 Location: Moscone Center, SF, CA

Total participants: 6,146

No. of exhibiting companies: 245

Exhibit space: 62,600 sq.ft.

#### **About**

The ASLA Conference on Landscape Architecture (Conference) is the largest gathering of landscape architects and allied professionals in the world, coming together to learn, celebrate, build relationships, and strengthen the bonds of the professional community.

#### Scope

In partnership with ASLA, Honeycomb Strategies worked with the Conference team and key vendor partners to establish an event sustainability baseline of practices and impacts for the ASLA 2022 Conference at The Moscone Center in San Francisco, CA. This information will be used as a benchmark to show environmental impacts and opportunities and create the foundation for building a comprehensive sustainable event management strategy for future ASLA events which, includes strategic goals and objectives setting, action plans, implementation and ongoing management strategy. It is understood not all impacts are under the direct control of the Conference planning teams, but rather under their influence.



#### **Climate Action Plan**

During the ASLA 2022 Conference on Landscape Architecture general session, ASLA CEO Torey Carter-Conneen released the ASLA Climate Action Plan and the Climate Action Field Guide for ASLA Members, charting a pathway for landscape architects to achieve zero greenhouse gas emissions in their projects and operations and increase carbon sequestration by 2040.

#### Our Vision for 2040: All landscape architecture projects will simultaneously:

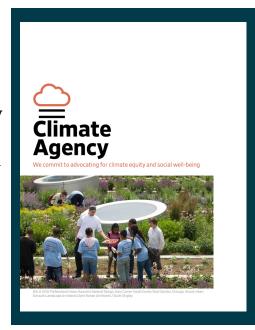
- Achieve zero embodied and operational emissions, and increase carbon sequestration
- Provide significant economic benefits in the form of measurable ecosystem services, health co-benefits, sequestration, and green jobs
- Address climate injustices, empower communities, and increase equitable distribution of climate investments
- Restore ecosystems and increase and protect biodiversity

"Landscape architects are already helping communities achieve this vision. As we increasingly experience the impacts of the climate and biodiversity crises, we know we need to act faster. We are the only design professionals who bring all the pieces together to plan and design what communities need to prepare themselves for a changing world," said ASLA Immediate Past President Eugenia Martin, FASLA.

"ASLA has developed its first Climate Action Plan in the spirit of great optimism. We envision communities becoming healthier and economically stronger because they have committed to drawing down carbon, restoring ecosystems and increasing biodiversity, and reducing reliance on vehicles – all while ensuring everyone in their community has equitable access to these benefits," said ASLA CEO Torey Carter-Conneen.



The ASLA Climate Action Plan is based in science. The Intergovernmental Panel on Climate Change (IPCC) has found humanity can only put a maximum of 340 more gigatons of greenhouse gas emissions into the atmosphere if we want a good chance of only increasing temperatures by 1.5° C (2.7° Fahrenheit), instead of 2° C (3.6° Fahrenheit). To advance the goal of keeping warming to 1.5° C, ASLA signed on to the International Federation of Landscape Architects (IFLA) Climate Action Commitment in 2021. The commitment was presented at the UN Framework Convention on Climate Change (UNFCCC) COP26 in Glasgow, Scotland and is supported by 70,000 landscape architects in 77 countries.





Excerpts from ASLA Climate Action plan. Image Credit: ASLA

The ASLA Climate Action Plan is rooted in the three goals (practice, equity, and advocacy) and six initiatives of IFLA Climate Action Commitment.

The ASLA plan will direct all ASLA programs and investments through 2025. Goals and actions will be revisited and updated in 2025 and every five years until 2040 and beyond.

To accomplish the plan, ASLA, as a mission-driven association, has also committed to reducing operational emissions by 20 percent by 2024 and achieving zero emissions by 2040. This report outlines baseline Scope 1, 2, and 3 emissions for the ASLA 2022 Conference on Landscape Architecture as a first step towards ASLA's journey to zero emissions.

ASLA is sharing this report in the spirit of full transparency and as a learning opportunity for our members, exhibitors, and partner organizations.



### **CONFERENCE IMPACTS**



 $ASLA\ 2022\ Conference\ education\ session.\ Image\ credit:\ ASLA/Korey\ Davis\ Photography$ 



Honeycomb Strategies conducted interviews with staff and vendors, toured the Expo, Convention and ancillary events, and evaluated existing data to compile this baseline analysis and carbon footprint.

#### **Environmental Impacts**

Choosing facilities with sustainability infrastructure in place to support lower carbon emission is key when planning conferences and is the framework for an events' impact.

The Moscone Center was the main venue along with a few events hosted at the Marriott Marquis ballroom.

19.33 US tons	Total waste generated
78,368 kWh	Total energy use
Not provided	Total water use*
3,160.79 MTC02e	Total carbon footprint

<sup>\*</sup>The Moscone Center was not able to provide accurate water use readings. The Marriott Marquis was not able to provide a complete water reading.

#### **Per Person Impacts**

12.75	0.51	6.29	Not Provided
kWh Energy	MTC02e Carbon	lbs Waste	Water*

#### **Energy Impacts**

The Moscone Center has the largest rooftop solar installation by area in San Francisco, consisting of approximately 2,600 photovoltaic modules and system capacity of 687 kw. This source of renewable energy helps reduce carbon emissions from energy consumption.

LEED Platinum<sup>®</sup> certified, the center has the lowest carbon footprint per delegate of any major convention center in North America.



The Moscone Center. Image credit: Moscone Center



#### **Waste Impacts**

19.33 tons

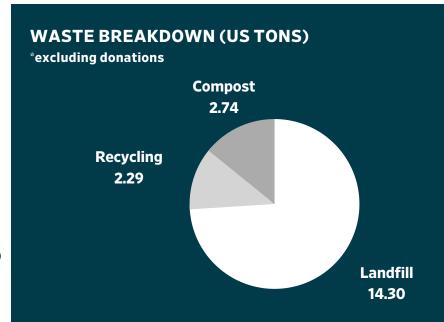
Total event waste\*

26%

Waste diversion rate\*

49,500 tons

Estimated donated materials (see page 12 for details)



Not all consumption is created equal, but all consumption can be planned, monitored, and reduced. Developing a waste management plan and working with stakeholders early helps increase the waste diversion rate. With intentional procurement goals, exhibitor sustainability pledges and purpose driven operations, negative environmental impacts can be minimized on the communities where future conferences are held.

6.29 lbs

Waste generated per participant\*

4.65 lbs

Landfill waste per participant

\*excluding donations



ASLA 2022 Conference SKETCH Lounge. Image credit: ASLA/Korey Davis Photography

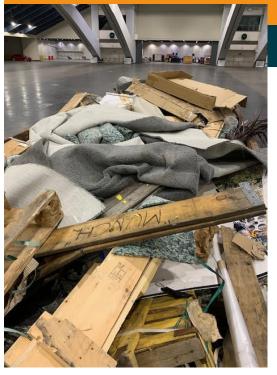


The Moscone Center has a comprehensive waste management program that includes collection of recyclables, compostable items, donations, and landfill.

Three bin systems are located throughout the center, with recyclables and compost sorted back of house as standard practice for events.

A common challenge with front of house waste streams is the inability to control disposable items that are brought into the Moscone Center. With many meals sourced by attendees from outside the venue, to-go cups and food serviceware contaminated the waste stream and drove down waste diversion efforts.





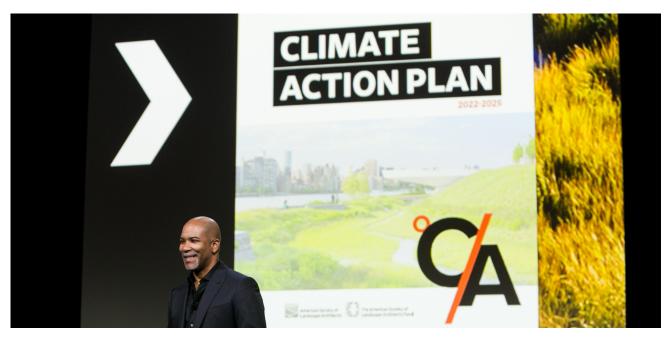
Waste bins (above) and piles of trash during teardown at ASLA 2022 Conference. Image credit: Honeycomb Strategies

The waste from the exhibitor hall was a combination of soft plastic wrap, graphics printed on substrates that were not recyclable, and flooring that was one-time-use. Packaging waste from booths and booth builds was also a contributing factor to the waste stream. Styrofoam, pallet wrap (both clear and colored) as well as bubble wrap were all packaging materials used and left to be disposed of.

The good news is that these are all items for which there are sustainable options. When exhibitors ship in crates rather than on pallets, they tend to produce less packaging waste. By making these adjustments for future events, waste generation can be reduced.

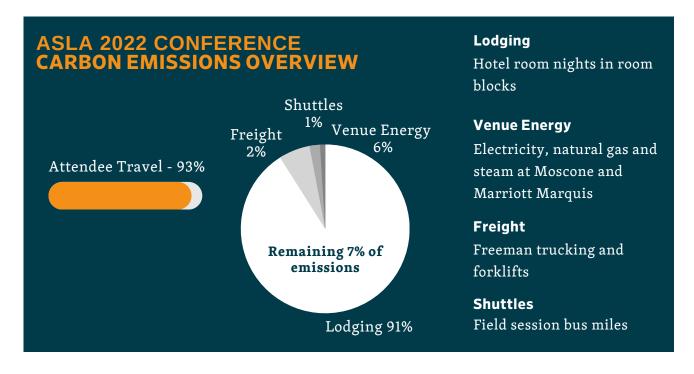


#### **Carbon Impacts**



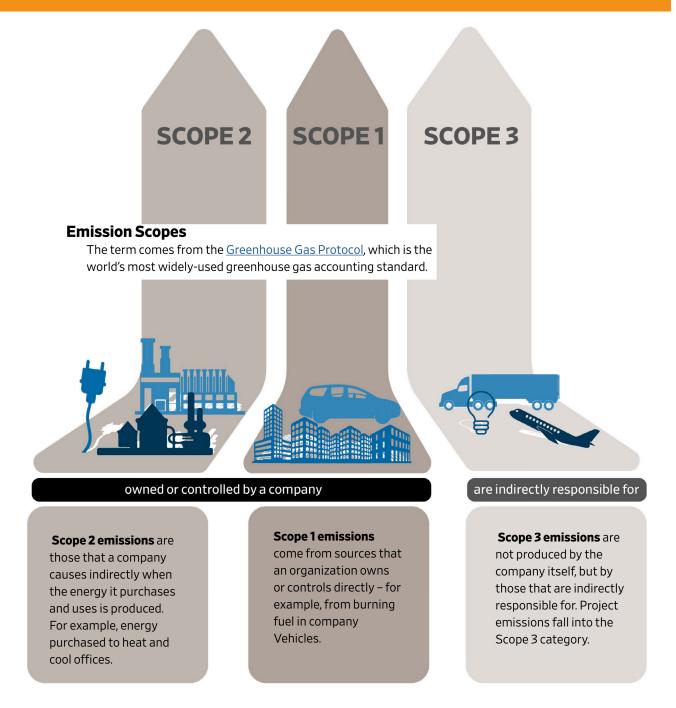
ASLA 2022 Conference General Session. Image credit: ASLA/Korey Davis Photography

The largest carbon emissions from any trade show comes from air travel and is considered a Scope 3 emission factors. For the Conference, 93% of the carbon emissions came from attendee and staff travel. The remaining 7% came from lodging, venue energy, freight and shuttle fuel. While an unavoidable part of meeting together in person there are many opportunities for ASLA to review Scope 3 emission factors to draw down carbon from the event. For this baseline report, Honeycomb Strategies measured components of waste, fuel, cargo and lodging that would be classified as Scope 3.





Events consume both direct and indirect energy. These are most often quantified through the Greenhouse Gas Protocol, which categorizes emissions based on their source.



The following page contains a detailed breakdown of what components were measured as part of this baseline analysis of the ASLA 2022 Conference.



#### **CARBON EMISSIONS SCOPE DETAIL**

SCOPE 1:		4.45 MTC02e
	GHG from Natural Gas consumption from The Moscone Center and Marriott Marquis:	1.11 MTC02e
	GHG from field session buses:	2.28 MTC02e
	GHG from forklifts / booms:	1.06 MTC02e

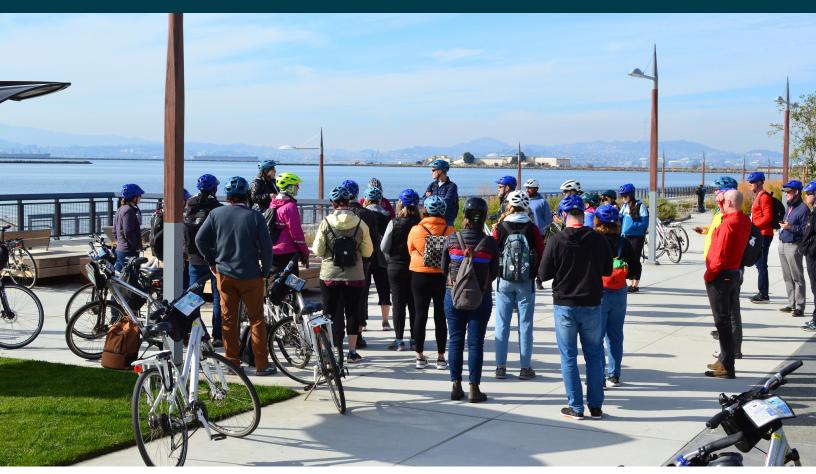
SCOPE 2		13.77 MTC02e
	GHG from electricity consumption from The Moscone Center and Marriott Marquis:	13.76 MTC02e
	GHG from steam consumption from The Moscone Center:	0.01 MTC02e
	GHG from chilled water consumption:	not provided

SCOPE 3	3,142.57 MTC02e
GHG from attendee and staff air travel:	2,500.31 MTC02e
GHG from attendee and staff rail travel:	0.0 MTC02e
GHG from attendee and staff automotive travel:	428.21 MTC02e
GHG from lodging:	212.14 MTC02e
GHG from waste generation from The Moscone Center:	-2.36 MTC02e*
GHG from fuel consumption of freight shipping:	4.27 MTC02e

<sup>\*</sup>In our calculations, waste yielded a negative carbon impact number. This is is due to the fact that diverted waste is not sent to incineration or landfill, avoiding GHG from combustion and methane release from decomposition.



# BEST PRACTICES AND OPPORTUNITIES FOR IMPROVEMENT



ASLA 2022 Conference Alameda Field Session. Image credit: ASLA/Korey Davis Photography

The following best practices were identified during observations and conversations at the ASLA Conference. These are intended to assist the Conference team in developing a strategic sustainability plan focused on continual improvement and stakeholder engagement.



The Moscone Center Exterior. Image credit: The Moscone Center

#### **Venues**

By choosing San Francisco as a host city, attendees were able to use public transit (BART) to get to the main venues and then walk to surrounding locations.

The average passenger vehicle emits about 0.40 kg of CO2/mile. From SFO to The Moscone Center is approx. 12.4 miles and with 6,149 attendees there was a potential to have saved 30 MTCO2e if each attendee took BART one way - the equivalent of keeping almost seven cars off the road for a year.

Partnering with a venue that has accessible public transportation from the airport should be a key factor in choosing future conference locations. Finding opportunities to work with the host destination or sponsors to support discounts for public transportation options has the potential to significantly reduce carbon emissions.

Anecdotally, attendees greatly appreciated the public transit options and walkability of the host city.

#### **Students**

ASLA does a great job including students in the Conference. Extending registration options to the eager yet less experienced community shows the awareness of ASLA to include smaller stakeholder groups. Students are able to attend by volunteering time at the Conference in exchange for complimentary registration.



ASLA 2022 Conference LA Bash Bloc Party. Image credit: ASLA/Korey Davis Photography



#### **Donations to the Local Community**

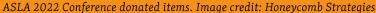
Each year, the ASLA Conference team works with the host ASLA chapter(s) to integrate the local community into the planning and design of the conference. The ASLA Northern California Chapter assisted in the planning process, curation of local field sessions, and identifying and implementing a local ASLA Legacy Project.

ASLA traditionally works in advance with the local Legacy Project organization to identify donations from the Conference and incorporate them into local projects, although this was not feasible for the Conference this year. These items are often very large and heavy such as outdoor seating, playground structures and pavers, as well as trees and plants.

The donation process is included in the exhibitor kit in advance and volunteer students collect additional information onsite. This program is a long-standing way for exhibitors to avoid the expense of shipping or disposing of items after the Conference. Donations are considered part of the Conference's waste. In reality, the expense of disposal or storage is shifted to the local Legacy Project or another non-profit partner to pick-up, store and then relocate the heavy items into the final installation. A donation per exhibitor toward the recipient would help offset those operational costs and act as a reminder to be mindful of what items are brought to the Conference.

The Moscone Center estimated 49,500 tons of items were donated to Habit for Humanity.







The following opportunities were identified during observations and conversations at the ASLA Conference. These recommendations are intended to assist the Conference team in developing a strategic sustainability plan focused on continual improvement and stakeholder engagement.



ASLA water bottle as a gifts. Image credit: Honeycomb Strategies

#### **Attendee Gifts**

Attendees notice the quantity of gifts on the exhibitor floor and provided by the Conference, and also the quality. There is an opportunity to both reduce the quantity of gifts provided by exhibitors and ASLA as well as improve the quality of gifts accepted by the Conference. Conference waste can be reduced by adding sustainability parameters in the exhibitor kit and communications for items such as reusability or end-of-use plans manageable in any municipality (like composting or recycling).

Being mindful of the resources used to produce an item and the ability to recycle or re-purpose it in a sustainable manner will show members that ASLA is not only looking at internal improvements but is also leading the industry in evaluating what items are produced and the environmental impact each has.

#### **Waste from Food and Beverage**

Of the few meals served at The Moscone Center through SAVOR, the food and beverage vendor, compostable plates and cutlery were used, which The Moscone Center is able to process. Disposable food packaging from outside outlets also became part of The Moscone Center waste stream. Even with good signage it was confusing for attendees to properly dispose of all these items. Staging a volunteer at key waste stations helps reduce contamination and increase diversion rates. This is also a visual cue to the attendees that the Conference is being intentional about the waste management.

Opportunities to further reduce waste include:

- Boxed lunches look for ways remove landfill items like foil-lined bags of chips or plastic wrapped items. Opt for a paper bag over a plastic box.
- Happy hour Provide attendees drinks in aluminum cans or bottles that are easily recyclable and avoid the use of plastic cups. Adding procurement guidelines into the exhibitor kit can lead to significant reductions in single use plastics.





Plastic bottles and cups used for beverages. Image credit: Honeycomb Strategies



#### **Signage**

Early planning with partners about the type of materials used and end-of-use plans can ensure the use, donation, and upcycle of sustainable materials and significantly reduce these environmental impacts.

General Service Contractors have many options for more sustainable substrates if asked. A best practice is to use more sustainable substrates and ask exhibitors to follow in this guidance.



ASLA 2022 Conference education signage: ASLA/Korey Davis Photography

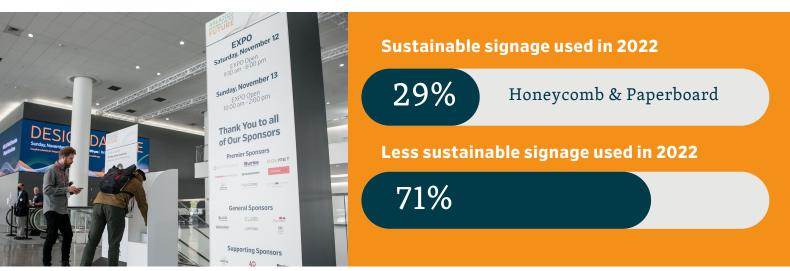
#### LIST OF LEAST SUSTAINABLE GRAPHICS MATERIALS

Vinyl cut decals	A peel & stick adhesive material - one time use and not recyclable
Vinyl banners	Hanging signs and directionals - one time use and not recyclable but can be upcycled
Fabric	100% Polyester made with yarn, three layered fabric tightly woven, wrinkle resistant - one time use and not recyclable but can be upcycled
Photo Tex decals	A peel & stick adhesive material - one time use and not recyclable
Polyfoam	Plastic face sign sheets and foam centered boards - one time use and not recyclable
PVC	Used for panels in MIS system printing - can be reused but not recyclable
Vinyl Walk & Wall	Printable, textured matte fabric coated with a clear adhesive - one time use and not recyclable

Source: Freeman Graphics Report



#### Signage continued

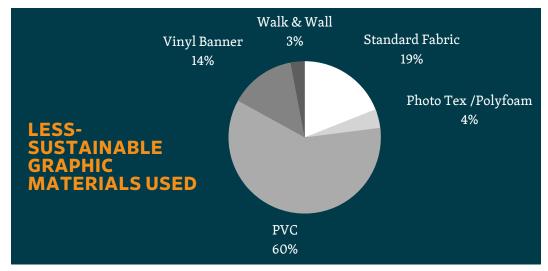


ASLA 2022 Conference EXPO signage. Image credit: ASLA/Korey Davis Photography. Data provided by the Freeman Environmental Performance Report, and includes all materials that Freeman manufactured for the event.

Of the banners and headers printed on fabric, seven were saved for reuse: ASLA Pavilion, SKETCH!, Practice Basecamp, Portrait Lounge, Learning Lab 1 and 2, and Sales Office.

#### Design for reuse: Avoid dates and show-specific branding

For items that must be printed for one time use, procure recyclable materials with a goal of 75% recycled content in the substrate or material. Sustainable substrates are those that are made from recyclable materials, are recyclable, or are produced to be reused multiple times.



Data provided by the Freeman Environmental Performance Report, and includes all materials that Freeman manufactured for the event.



#### **Exhibitor Flooring**

Exhibitors were required to have a covering on the booth floor. This practice was established to avoid water damage and for continuity as certain venues do require floors to be covered. Since the pandemic, there has been a shift to flooring requirements as the exception, enabling exhibitors to choose flooring if they wish. Providing guidance on the most sustainable flooring options available would improve the environmental impact even when flooring requirements are in place.

#### Requiring flooring:

- Increases waste to landfill. Vinyl flooring is one-time use. Carpet may be used again depending on the color, yet the resources used to produce it and its eventual end of use adds to emissions.
- Increases carbon emissions from shipping the material, even if local.
- Doesn't necessarily elevate the experience. With regards to aesthetics, some booths had the same color floor as the convention center floor.



ASLA 2022 Conference ASLA Pavilion. Image credit: ASLA/Korey Davis Photography

Freeman, one of the event management vendors, reported that 3,682 sq. yds. of single use flooring material was used on the expo floor. Flooring allows for clear demarcation for the booth footprint as many don't have walls or are traditional booth build outs. However, Freeman can help explore other options to achieve this without requiring flooring which can significantly reduce waste to landfill and carbon emissions from shipping and waste.

Reusable flooring used in 2022

One-time use flooring used in 2022

53%

Classic carpet & padding

47%



# UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS



ASLA 2022 Conference student attendees. Image credit: ASLA/Korey Davis Photography

The SDGs were adopted by the UN in 2015, with 17 goals to be accomplished by 2030. The SDGs provide a framework for nations to work together to create a more peaceful and just world, placing a priority on progress for those who are most in need. The goals address five pillars:

#### People, Prosperity, Planet, Peace, and Partnership.



Although there are 17 stated goals, the goals affect each other, and all actions will support other outcomes. Integrated solutions are required for sustainable development. The climate and biodiversity crises threaten our ability to collectively meet these goals, increasing food insecurity and migration from increasingly uninhabitable places.

The IFLA Climate Action Commitment, of which ASLA is a signatory, includes a commitment to advancing the SDG that calls for "accelerating our work to repair global ecosystems." Landscape architects contribute to achieving these goals through their planning and design efforts, and several of the goals are a focus of our practice.

Reporting on the UN Sustainable Development Goals (SDGs) is an important step for conference organizers to communicate their commitment and contribution to the achievement of the Global Goals, claiming accountability and responsibility to take the necessary actions for improvement and measuring progress over time.

The ASLA Conference supports many of the UN SDGs with opportunities to act on all 17 goals as detailed in this section.





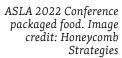
#### **Opportunity**

Identify how attendees can collect items for local communities, such as professional attire for job interviews or items for disaster-related emergencies.



#### **Opportunity**

Rescue safe food not used on the Conference floor.







#### **Opportunity**

Provide welcoming sensory breakrooms or quiet spaces. Produce a sponsored walk or yoga session and 'mocktails' at happy hours and evening events.



#### **Best Practice**

Complimentary registration in exchange for volunteer hours was provided to students, increasing the opportunity for participation. The 2022 Conference offered over 140 courses, allowing attendees to fulfill their professional development hours (PDH) over four days.



#### **Best Practice**

ASLA supported the WxLA scholarship program winners by providing registration.

56% of Conference speakers self-identified as female.

ASLA 2022 Conference General Session keynote. Image credit: ASLA/Korey Davis Photography







#### **Opportunity**

Purchase water restoration credits equal to the water consumed at the main

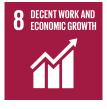


#### **Opportunity**

Contract exclusively with LEED certified buildings to host the Conference. ASLA has committed to this moving forward. Give preference to venues recognized through sustainable landscape certification such as SITES.



Gulf State Park Lodge, AL. SITES and LEED-certified event location.
Image Credit: SITES



#### **Best Practice**

Conference and attendees contributed to the local San Francisco community through their purchases. There is also opportunity to work with local entrepreneurs in the procurement process.



#### **Best Practice**

The Conference provides attendees and exhibitors a chance to share innovative technologies that help to build resilient communities using landscape architecture practices.

ASLA 2022 Conference breakout session. Image credit: ASLA/Korey Davis Photography







#### **Best Practice**

ASLA provided scholarships to individuals to attend the Conference in person, and made 40 conference sessions available via video recording. There is an opportunity to provide synchronous content virtually to eliminate barriers to participation that may be based on the ability to travel freely or economic challenges and enable increased participation.



#### **Best Practice**

The Conference provides education to attendees to learn and source solutions to improve resilience, sustainability, and quality of life in landscapes, cities and communities. Resilience and Stewardship was a stand alone education track for the Conference.

ASLA 2022 Conference Practice Basecamp. Image credit: ASLA/Korey Davis Photography





#### **Opportunity**

Add procurement best practices to help the ASLA internal team as well as exhibitors do their part to source the most sustainable items available.



#### **Opportunity**

Offset part or all of the Conference's carbon footprint. The footprint includes venue energy consumption, occupied hotel room nights, all participant travel (ground and air), fuel used for freight and shipping, shuttle fuel used for local tours, and waste diversion impacts.

Airplane over trees. Image Credit: Apostolos Vamvouras on Unsplash.







#### **Opportunity**

Offset water consumption for the duration of the Conference or look for a Legacy Project that has an opportunity to improve waterways.



#### **Opportunity**

Choose a carbon offset project the supports sustainable improvement to life on land and reduces carbon emissions released into the environment. There is also an opportunity to add a volunteer day of service such as a tree planting project in the Conference's local community.



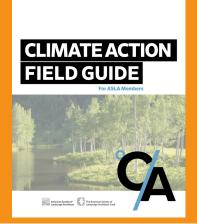
#### **Opportunity**

Build the Conference into a place where leaders and community members come together to find solutions for social and environmental justice.



#### **Best Practice**

The ASLA published the Climate Action Field Guide for ASLA Members, focusing on solutions and toolkits to address the interconnected climate and biodiversity crises, helping landscape architecture professionals and students become better climate advocates individually and through collaboration.

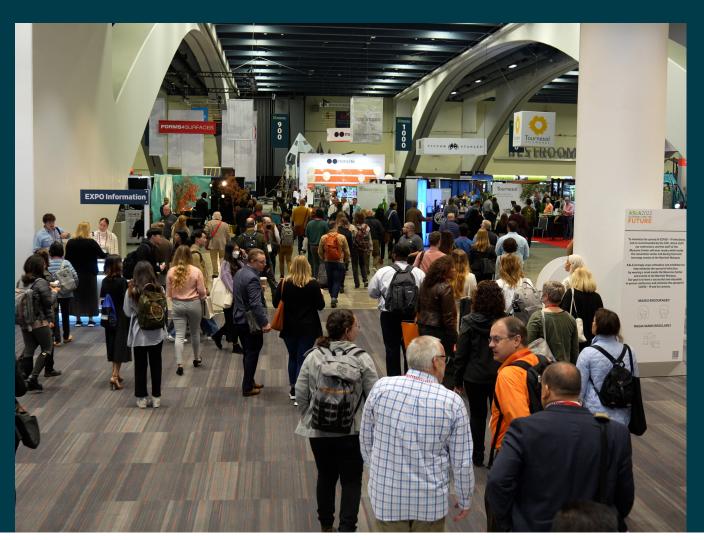


#### **Opportunity**

There is an opportunity to have ASLA members and partners get involved in producing a more sustainable Conference through ideation, reduction and respectful procurement best practices.



## NEXT STEPS



ASLA 2022 Conference Entrance Hall. Image credit: ASLA/Korey Davis Photography

An effective sustainability program begins early in the planning process. When making decisions, it is essential to focus on:

#### **Impact** Vendor selection, partner Where can ASLA decrease the environmental education and procurement impact of the Conference? Continue to include programming to address racial Where can the Conference make more of a inequity in the profession and positive impact in JDEI programming and equity? increase representation of BIPOC speakers **Control** Programming and What areas does ASLA control and manage? procurement Relevance Form working groups to How can ASLA increase dialogue on shared reach consensus on solutions to the industry's top strategies to lower environmental concerns? environmental impact

The ASLA community is very engaged and ready to act. The Climate Action Field Guide for ASLA Members highlights community engagement strategies and building climate coalitions in the Climate Leadership Toolkit. Allied professionals and experts across disciplines can come together around organized topics to discuss climate-smart solutions and tackle barriers to local implementations. The Conference can be used as a time for climate coalitions to workshop some of the built environment industry's opportunities for improvement.

# What are the risks if all ASLA outlets are not speaking to the same sustainability story and the Climate Action Plan is not played out through all ASLA verticals? Communication disconnect and unevenly weighted reduction goals Add a sustainability page to the Conference website that ties to Climate Action Plan and details actions at the Conference



#### **Boundaries and Quantifications**

#### **ENERGY USE**

The energy boundary consists of energy consumed during the ASLA Conference and corresponding move-in/move-out periods.

- Venue(s): Total energy consumption includes purchased electricity, fuel burning for
  heating and cooling, and district steam reported through manual meter readings of The
  Moscone Center. Purchased electricity for the Marriott Marquis ballroom is also included.
- Energy use from hotel accommodations, fuel burning from participant travel to/from the destination, and mobile fuels from other vehicles operated by the venues or third parties were not included in the energy footprint (but are included in the GHG emissions calculations).

#### **CARBON EMISSIONS**

Included in the total carbon footprint number reported:

- The Moscone Center non-renewable electricity and stationary combustion of fuels
- Estimated mobile fuel combustion of Freeman freight:
  - General contractor/show management deliveries
  - Marshaling yard trucks and trailers used to support this Conference
- Air travel to the destination by participants (attendees, staff, vendors, exhibitors)
- Local and regional travel to the destination by participants. Participants were assigned a round trip distance based on the characteristics and layout of departure city as provided in the registration data. Mode of travel includes car, regional train, and local bus/metro.
- Ground shuttle use for offsite events and event staff
- GHG emissions per occupied room for hotels was estimated at 6,149 attendees at an average of three nights per attendee
- GHG emissions for waste streams, data provided by hauler or venue

Not included in the total carbon footprint number reported:

- The number of vegetarian and non-vegetarian meals served at the Conference
- Ground transportation by participants from airport to The Moscone Center
- All advanced freight sent to/from the warehouse(s) to The Moscone Center

#### **QUANTIFICATION**

- Energy emissions at venues from US EPA "Emission Factors for GHG Inventories" (March 2020 update)
- Emission factors for electricity consumption at venues obtained from EPA eGRID Year 2019 summary tables
- Emission factors for stationary fuel burning obtained from the World Resources Institute stationary combustion tool 4.0
- Flights US EPA "Emission Factors for GHG Inventories" (March 2020 update)
- Other attendee carbon offsets were calculated separately from the total GHG emissions value
- Hotel Carbon Measurement Initiative, using occupied hotel room night data provided, metrics per the Cornell Hotel Sustainability Benchmarking research report published 2019
- Emission factors obtained from the US EPA Waste Reduction Model (WARM) Version 15



#### **Thank You**

Thank you to the 2022 ASLA Conference team for helping to collect data.

Additionally thank you to the trade show suppliers for contribution to the content of this report including The Moscone Center,

San Francisco Marriott Marquis and Freeman.

